Hyperthermia in Cancer Treatment

Hyperthermia, a procedure in which body tissue is exposed to high temperatures (up to 106ºF), is under investigation to assess its effectiveness in the treatment of cancer. Scientists think that heat may help shrink tumors by damaging cells or depriving them of substances they need to live. They are studying local, regional, and whole-body hyperthermia, using external and internal heating devices. Hyperthermia is almost always used with other forms of therapy (radiation therapy, chemotherapy, and biological therapy) to try to increase their effectiveness.

Local hyperthermia refers to heat that is applied to a very small area, such as a tumor. The area may be heated externally with high-frequency waves aimed at a tumor from a device outside the body. To achieve internal heating, one of several types of sterile probes may be used, including thin, heated wires or hollow tubes filled with warm water; implanted microwave antennae; and radiofrequency electrodes.

In regional hyperthermia, an organ or a limb is heated. Magnets and devices that produce high energy are placed over the region to be heated. In another approach, called perfusion, some of the patient's blood is removed, heated, and then pumped (perfused) into the region that is to be heated internally.

Whole-body heating is used to treat metastatic cancer that has spread throughout the body. It can be accomplished using warm-water blankets, hot wax, inductive coils (like those in electric blankets), or thermal chambers (similar to large incubators).

Hyperthermia does not cause any marked increase in radiation side effects or complications. Heat applied directly to the skin, however, can cause discomfort or even significant local pain in about half the patients treated. It can also cause blisters, which generally heal rapidly. Less commonly, it can cause burns.

There are many clinical trials (research studies) being conducted evaluating the use of hyperthermia. To learn more about clinical trials, call the Cancer Information Service at the telephone number listed below or access http://cancertrials.nci.nih.gov on the Internet. The NCI-supported Hyperthermia Physics Center and the Hyperthermia Committee of the Radiation Therapy Oncology Group (RTOG) have established and published hyperthermia quality assurance guidelines for clinical trials.[1]

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Sources of National Cancer Institute Information

Cancer Information Service
Toll-free: 1–800–4–CANCER (1–800–422–6237)
TTY (for deaf and hard of hearing callers): 1–800–332–8615

NCI Online
Internet
Use http://www.cancer.gov to reach NCI's Web site.

CancerMail Service
To obtain a contents list, send e-mail to cancermail@icicc.nci.nih.gov with the word "help" in the body of the message.

[1]Dewhirst MW, Phillips TL, Samulski TV, et al. RTOG quality assurance guidelines for clinical trials using hyperthermia. *Int. J. Radiation Oncology Biol. Phys* 1990; 18:1249–1259.

CancerFax® fax on demand service
Dial 301–402–5874 and listen to recorded instructions.

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